A BUSINESS CASE FOR ELECTRONIC COMMERCE

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The Defense Logistics Agency has been designated as DoD's Executive Agent for EDI and Data Protection. One of its first tasks was to examine the economic implications of Electronic Commerce. This report presents the results of that examination.

Based upon an examination of 16 key documents, we estimate that DoD could realize direct and indirect cost savings of almost $1.2 billion over a 10-year period by replacing these manually processed documents with their electronic equivalents. To achieve those savings, DoD would need to make investments totaling approximately $80 million in new systems and procedures.

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Executive Summary

A BUSINESS CASE FOR ELECTRONIC COMMERCE

The Department of Defense (DoD) has launched a new initiative that will revolutionize the way it conducts business. Building upon the success of electronic data interchange (EDI), which is the computer-to-computer exchange of routine business information, *Electronic Commerce* focuses on completely automating DoD's business functions, including procurement, contract administration, payment, supply management, maintenance, and transportation.

To assure the success of the Electronic Commerce initiative, the Principal Deputy Assistant Secretary of Defense (Production and Logistics) designated the Defense Logistics Agency as DoD's Executive Agent for EDI and Data Protection. One of the Executive Agent's first tasks is preparation of a business case for Electronic Commerce. This report presents that business case.

The DoD could realize cost savings totaling $1.2 billion over a 10-year period by replacing 16 commonly used paper documents (such as purchase orders, requests for quotations, bills of lading, and discrepancy reports) with their electronic equivalents. The annual savings initially would be modest, $42 million after 3 years, but they would accelerate to $108 million after 5 years and $213 million after 10 years. To achieve those savings, DoD would need to make investments totaling approximately $80 million in new systems and procedures.

We used engineered labor standards to estimate the direct cost savings if DoD electronically created, distributed, and processed the 16 documents. Although the private sector routinely claims savings of between $10 and $50 for every paper document eliminated through EDI, our savings averaged a conservative $2.40. For every dollar in direct savings, we estimated that DoD would indirectly save an additional $1.80 from reduced inventories, streamlined operations, enhanced pre-payment audits, and reduced interest payments. Again, our approach is conservative when compared with that of the private sector, which traditionally looks for indirect benefits on the order of 3 to 5 times the direct benefits.

DoD's Electronic Commerce initiative clearly has the potential to yield substantial benefits for a relatively nominal investment. However, the challenge to the Executive Agent is to establish a framework within which the Military Services and Defense agencies can rapidly move to obtain those benefits. To that end, the Executive Agent needs to assign priority to those areas that offer the greatest opportunity: procurement, contract administration, payment, and transportation. It also needs to set up the infrastructure necessary to implement Electronic Commerce.

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CHAPTER 1

INTRODUCTION

BACKGROUND

In a May 1988 policy memorandum, the Deputy Secretary of Defense directed the Department of Defense (DoD) components to make "maximum use of electronic data interchange (EDI) for the paperless processing of all business-related transactions." He also charged the Assistant Secretary of Defense (Production and Logistics) with responsibility for establishing guidance that will result in ". . . acceptance of EDI as the normal way of doing business with DoD by the early 1990s."

In response to that charge, the Principal Deputy Assistant Secretary of Defense (Production and Logistics) designated the Defense Logistics Agency (DLA) as DoD's Executive Agent for EDI and Data Protection. Among the responsibilities assigned to the Executive Agent are complying with DoD policies and industry standards, coordinating software and hardware requirements, providing uniform implementation guidelines, and representing DoD's interests before standards and industry groups.

Through the use of computer hardware, software, communications, and transaction standards, private-sector companies are using EDI to replace the tedious flow and processing of paper purchase orders, shipping notices, receipts, invoices, payments, and a variety of other documents. The benefits from exchanging that information electronically include fewer errors in data entry, elimination of mailing costs, decreased paper handling, reduced inventories, better cash management, and shortened order times.

Although DoD seeks to garner those same direct benefits from EDI, its long-term goal is much broader and more encompassing. It wants to use EDI as a tool to fundamentally change its business practices, from paper-based document processing to a total electronic environment. DoD's name for such an undertaking is "Electronic Commerce through EDI."

DoD's concept of Electronic Commerce goes well beyond EDI, which focuses principally on replacing individual business forms with their electronic equivalents. Electronic Commerce is the integration of EDI, electronic mail, electronic bulletin boards, electronic funds transfer, and similar techniques into a comprehensive system encompassing all business functions: procurement, contract administration, payment, supply management, distribution, transportation, repair and maintenance, and base operations, to name a few. The thrust is not just to automate current manual processes but to provide DoD with a capability to fundamentally alter the way it carries out its day-to-day business operations.

One of the Executive Agent's first tasks in making Electronic Commerce a reality within DoD is preparation of a business case. This report presents that case.

REPORT ORGANIZATION

Chapter 2 identifies 16 high-volume DoD documents that are strong EDI candidates. For each of those documents, we calculate both the direct and indirect cost savings that would accrue if DoD eliminated the documents and exchanged the same information electronically. Additionally, we project life-cycle cost savings assuming that implementation of Electronic Commerce occurs over a 10-year period. Finally, we estimate the investment costs required to initiate and sustain an Electronic Commerce environment.

Chapter 3 details the roles, initiatives, and funding requirements of the Executive Agent in implementing Electronic Commerce.

CHAPTER 2

EDI SAVINGS AND BENEFITS

INTRODUCTION

This chapter presents our estimates of the cost savings and benefits of implementing Electronic Commerce within DoD.

We begin by targeting those documents with the greatest EDI potential and determining the direct and indirect cost savings and benefits associated with moving them electronically. We then overlay those savings and benefits onto a phased implementation schedule, covering a 10-year period, to calculate the life-cycle savings. Finally, we estimate the investment costs that DoD must make to garner those savings.

OPPORTUNITY AREAS

The DoD currently has in excess of 2,100 documents that are candidates for Electronic Commerce. Almost two-thirds of those documents (1,395) are standardized Defense Department (DD) forms, while another 155 are General Services Administration Standard Forms (SF). Both the DD and SF forms require Office of Management and Budget (OMB) approval under the Paperwork Reduction Act; OMB also collects extensive information on the volume and reporting burdens of all DD and SF forms. The remaining documents (almost 600 of them) are either Service-specific, internal, or interagency forms.

Since we did not have time to examine every DoD document individually, we focused on a small subset with the greatest potential return on investment. The first step in identifying those documents involved targeting areas of opportunity within DoD. Using private-sector experience in EDI applications as a guide, we identified four key opportunity areas: procurement and contract administration, transportation, supply and maintenance, and fuels.

Next, we asked functional experts experienced in EDI applications to identify the routine paper documents within those areas that offer the greatest EDI potential. We applied a number of criteria in selecting potential documents:

- The document should be used extensively throughout DoD.
- The document should be manually processed. (Although some electronically processed documents, such as those flowing through the Defense Logistics Standard Systems, may yield benefits by being converted from fixed- to variable-length EDI formats, substantially greater savings are achieved when paper documents are eliminated.)
- The document should have multiple users, which dramatically increases both the amount of paper flowing through the system and the labor required to process the paper.
- The document should have a private-sector counterpart, which would help to ease its replacement through EDI.

Using these criteria, the functional experts identified 16 separate documents as EDI candidates. Since two of documents (the SF 18 and SF 30) are processed in different ways, we treated each variation as a separate document in calculating the direct cost savings. Table 2-1 identifies the 16 documents and their associated volumes by opportunity area.

DIRECT COST SAVINGS

The manual handling and processing of documents within DoD requires several labor-intensive and costly activities. They include document distribution (making copies of documents and distributing them among users); mailing (principally the purchase of stamps and envelopes); document sorting, reconciling, and auditing (comparing the document to other documents); data entry (which can occur multiple times if the information is entered into more than one computer system); error resolution (checking for and correcting mistakes); document storage and retrieval; and telephone usage (such as placing orders by phone). Since most of these activities would be eliminated in an Electronic Commerce environment, we define the associated savings as direct cost savings.

To determine the cost savings resulting from eliminating manual activities, we used engineered work standards supplied by the U.S. Army Finance and Accounting Center. Those standards detail the labor content and time allotment for performing each of the manual activities described above. We then multiplied the standards by

TABLE 2-1

KEY EDI CANDIDATES

Opportunity area/document		Estimated annual volume (millions)
Procurement/Contract Administration		
DD Form 1155	– *Order for Supplies and Services*	11.00
SF 18	– *Request for Quotations (Written)*	5.40
SF 18	– *Request for Quotations (Telephone)*	4.00
SF 30	– *Amendment of Solicitation/Contract Modification (Local)*	3.75
DD Form 250	– *Material Inspection and Receiving Report*	2.50
SF 129	– *Solicitation Mailing List Application*	1.00
SF 1443	– *Contractor's Request for Progress Payments*	0.40
SF 30	– *Amendment of Solicitation/Contract Modification (Non-Local)*	0.25
Transportation		
SF 1103 SF 1113	– *Freight GBL, CBL, and Public Voucher*	2.30
SF 1203 619/619-1 SF 1113	– *Personal Property GBL, Statement of Accessorial Services Performed, and Public Voucher*	0.80
SF 1169 SF 1113	– *Government Travel Request and Public Voucher*	0.39
———	– *Voucher Stub and Check*	0.27
MT 364R	– *Standard Tender*	0.03
Supply/Maintenance		
SF 364	– *Report of Discrepancy (Supply)*	0.30
SAV 926	– *Monthly Report, Receipt of Repairables*	0.28
SF 368	– *Product Quality Deficiency Report*	0.10
SF 361	– *Transportation Discrepancy Report*	0.03
Fuels		
DD Form 1898	– *Aviation Fuels Sales Slip*	0.30

Note: GBL = Government Bill of Lading, CBL = Commercial Bill of Lading, MT = MTMC (Military Traffic Management Command), SAV = Standard Aviation Systems Command

the appropriate Government Schedule (GS) labor rate to obtain the savings associated with eliminating these activities (see Table 2-2). We segregated the savings into low, medium, and high categories to show that all documents are not processed in the same manner; some, in fact, bypass one or more of the activities during the processing stage.

Next, we used functional experts to determine whether each document processing unit (procurement office, finance office, etc.) performed a particular operation. If the processing unit performed that operation, we assigned either a low,

TABLE 2-2

DIRECT COST SAVINGS THROUGH EDI

Operation	Activity	Comment	Cost category ($)		
			Low	Medium	High
Document distribution	Separate documents, make copies, route to mail room, prepare address labels, stuff envelopes	Costs increase with complexity of operation	0.02	0.04	0.06
Mailing	Procure envelopes and stamps	Costs increase with number of documents requiring single envelopes	0.11	0.16	0.26
Document receipt	Receive, open, sort, date, stamp, route	Costs increase with complexity of sorting	0.01	0.02	0.03
Document processing	Match, reconcile, audit	Costs increase with document complexity and data volume	0.15	0.26	0.41
Document preparation and control	Examine and prepare for data entry	Costs increase with document complexity	0.13	0.21	0.47
Data entry	Enter data	Costs increase with volume of data	0.06	0.17	0.68
Error resolution	Research and correct errors, prepare correspondence	Costs increase with volume of data	0.05	0.07	0.09
Document storage and retrieval	Log, separate, sort, microfilm, box, file, retrieve documents	Costs increase with filing and microfilming requirements	0.10	0.16	0.28
Telephone procurement	Procure material and services	Costs increase with number of telephone solicitations	1.78	3.50	5.33

medium, or high cost after applying specific, predefined criteria (see the Comment column in Table 2-2). If it did not, we assigned a zero score.

In determining the direct cost savings of each document, we assumed that all operating costs would remain the same except telecommunications, which would increase in an EDI environment. We therefore subtracted telecommunications costs from the direct cost savings figures to obtain a net savings figure for each document.

Table 2-3 illustrates the application of this approach to DD Form 1155, *Order for Supplies and Services.* That document is used as a purchase order, delivery order, receiving and inspection report, and voucher. Typically, it is processed by four separate DoD activities: a procurement office, a receiving office, a base finance

office, and the requesting unit. One activity, the base finance office, receives separate copies at two different times and for two different purposes (once as a purchase order and the other as a voucher). In calculating the direct cost savings of DD Form 1155, we treated the base finance office as two separate processing units. We assigned a high cost to mailing because individual copies of DD Form 1155 are routinely mailed to contractors. We assigned low costs to the requesting unit in four operations (document receipt, document processing, document preparation and control, and data entry) since it uses the DD Form 1155 for a single purpose (as a purchase order) and performs no complicated sorting or document matching. On the other hand, because of its relative complexity compared with most other DoD documents, we identified high savings in error resolution at the base finance office on both occasions in which that office processes the document. Finally, we judged the telecommunications costs of transmitting the DD Form 1155 to be relatively small, since most processing activities (the base finance office, the receiving office, and the unit requesting the purchase) are located on the same base. The one exception is the copy sent by the procurement office to the contractor, which we assumed to be a non-local transmission.

TABLE 2-3

DIRECT COST SAVINGS WORKSHEET
DD FORM 1155: *ORDER FOR SUPPLIES AND SERVICES*

Cost activity	Savings by processing unit ($)					
	Procurement office	Receiving office	Base finance office (1st cycle)	Base finance office (2nd cycle)	Requesting unit purchase	Total
Document distribution	0.04					0.04
Mailing	0.26					0.26
Document receipt		0.02	0.02	0.02	0.01	0.07
Document processing		0.15	0.26	0.26	0.15	0.82
Document preparation and control		0.21	0.21	0.21	0.13	0.76
Data entry		0.17	0.17	0.17	0.06	0.57
Error resolution		0.07	0.09	0.09	0.07	0.32
Document storage and retrieval	0.16	0.10	0.16	0.16	0.10	0.68
Telephone procurement						
Subtotal	0.46	0.72	0.91	0.91	0.52	3.52
Telecommunications costs	-0.09	-0.02	-0.02	-0.02	-0.02	-0.17
Total	0.37	0.70	0.89	0.89	0.50	3.35

DD Form 1155 appears to be a typical DoD document from a processing standpoint. At $3.35 per document (the total shown in Table 2-3), the cost savings from EDI transmission of DD Form 1155 are higher than the average of $2.40 for all documents examined in this study. What distinguishes this document from the other 15 is its high volume – DoD generates approximately 11 million copies annually.

We used this same approach for each of the documents listed in Table 2-1. As Table 2-4 shows, if all 16 documents were replaced by electronic transmissions, DoD would reap $98 million annually in direct cost savings. (The appendix contains a detailed worksheet for each document.) Additionally, Table 2-4 shows that the majority of the savings ($84.5 million or 86 percent) would occur in the procurement and contract administration area. Although not as lucrative, transportation would contribute $11.8 million in annual savings, approximately 12 percent of the total. Smaller savings ($1.3 million annually) were calculated for supply and maintenance, mainly because many of the existing documents either are already transmitted electronically (usually by way of 80-column punch cards) or will soon be transmitted electronically under the Modernization of Defense Logistics Standard Systems (MODELS) initiative. Finally, the fuels area yielded meaningful but relatively small savings, primarily because we examined only one low-volume document.

In summary, the DoD could potentially reap direct cost savings of approximately $98 million by replacing these 16 documents with their electronic equivalents. The most lucrative document from a cost savings standpoint is DD Form 250 at $5.72 per copy, which suggests that our estimates are very conservative when compared with private-sector estimates of between $10 and $50 per document.

Direct cost savings are only part of the cost savings equation. Indirect cost savings from Electronic Commerce are also substantial; they are addressed in the next section.

TABLE 2-4

SUMMARY OF DIRECT COST SAVINGS

Opportunity area/document		Estimated annual volume (millions)	Savings per document ($)	Total savings ($ millions)
Procurement/Contract Administration				
DD Form 1155	– *Order for Supplies and Services*	11 00	3 35	36 9
SF 18	– *Request for Quotations (Written)*	5 40	0 84	4 5
SF 18	– *Request for Quotations (Telephone)*	4 00	3 45	13 8
SF 30	– *Amendment of Solicitation/Contract Modification (Local)*	3 75	3 35	12 6
DD Form 250	– *Material Inspection and Receiving Report*	2 50	5 72	14 3
SF 129	– *Solicitation Mailing List Application*	1 00	0 94	0 9
SF 1443	– *Contractor's Request for Progress Payments*	0 40	1 27	0 5
SF 30	– *Amendment of Solicitation/Contract Modification (Non-Local)*	0 25	3 98	1 0
	Subtotal			84 5
Transportation				
SF 1103 SF 1113	– *Freight GBL, CBL, and Public Voucher*	2.30	3 12	7 2
SF 1203 619/619-1 SF 1113	– *Personal Property GBLs, Statement of Accessorial Services Performed, and Public Voucher*	0.80	4 45	3 6
SF 1169 SF 1113	– *Government Travel Request and Public Voucher*	0.39	1 87	0.7
———	– *Voucher Stub and Check*	0.27	0 67	0 2
MT 364R	– *Standard Tender*	0.03	2 28	0 1
	Subtotal			11 8
Supply/Maintenance				
SF 364	– *Report of Discrepancy (Supply)*	0.30	2 06	0 6
SAV 926	– *Monthly Report of Repairables*	0.28	1 80	0 5
SF 368	– *Product Quality Deficiency Report*	0.10	1 47	0 1
SF 361	– *Transportation Discrepancy Report*	0 03	1 29	0 1
	Subtotal			1 3
Fuels				
DD Form 1898	– *Aviation Fuels Sales Slip*	0 30	1 26	0 4
	Subtotal			0 4
	Total			98 0

INDIRECT COST SAVINGS

Many private-sector companies have found that the indirect cost savings from EDI significantly outweigh the direct cost savings. They cite inventory reduction, improved customer service, reduced manufacturing costs, streamlined operations, and increased asset visibility as areas in which significant indirect cost savings occur. The DoD is likely to experience many of those same benefits as well as improved quality control, enhanced contract management, better prepayment auditing, increased price discounts, and reduced interest payments. The key question is: How much additional cost savings could DoD reasonably expect from these indirect sources?

Arthur D. Little, Inc. (ADL) provides a partial answer to that question. In a report on the implementation of EDI in the grocery industry, ADL projected that EDI indirect cost savings would exceed direct cost savi[illegible] by as much as 3 to 1.[1] Thus, for every dollar of direct cost savings, the implementing organization can expect an additional $3 in indirect cost savings. Recent studies indicate that ADL may have actually understated the level of indirect benefits realized by many firms.[2]

To further understand indirect cost savings, we reviewed the economic analysis of DoD's EDI program in transportation. That program, involving the installation of EDI capability at 165 shipping activities and 3 payment centers, has competed successfully for DoD's Productivity Enhancement Capital Improvement funds. The supporting economic analysis projected an indirect-to-direct cost savings ratio of 1.8 to 1. To test the reasonableness of that ratio and also whether it could be applied to other categories of documents outside the transportation arena, we examined in greater detail several of the more promising indirect benefits expected from the electronic transmission of our targeted documents, as described below.

Inventory

Private industry reports numerous examples in which large inventory savings follow the implementation of EDI. For example, K-Mart cites that the use of EDI to place orders with suppliers led to a 5-day reduction in inventory. Navistar notes that

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[1]*Electronic Data Interchange for the Grocery Industry: Feasibility Report*, Washington, D.C.: Arthur D. Little, Inc., 1980.

[2]See Richard C. Norris, "The ADL Grocery Report Revisited," *EDI Forum, Founding Issue*, Oak Park, Illinois: EDI Publications, Inc., 1989, p. 47.

EDI helped to reduce raw materials inventories by 80 percent. Safeway estimates a 1-day reduction in inventory levels resulting from EDI,[3] while General Motors claims that EDI will help trim a minimum of 2 days from its supply pipeline and as much as $200 dollars from the cost of producing a car.[4]

Most organizations recognize that the use of EDI alone does not reduce inventory. When combined with other management initiatives, however, it can make inventory reduction a reality. For instance, many manufacturers routinely order the minimum amount of inventory to keep their production lines in operation. Suppliers then deliver the inventory "just in time" to meet production requirements. That approach, which results in significantly lower inventories for manufacturers, is made possible by a number of factors, including excellent manufacturer-supplier relations and sophisticated transportation practices. But EDI also plays a role. Automobile manufacturers cite EDI as the key ingredient that enables them to move the volume of purchase orders and material release orders at the speeds necessary to make just in time a viable approach. Without EDI, the increase in paperwork required by just-in-time inventory practices would be unmanageable. Other companies are using EDI-supplied information to track inventory under movement to assure that it does in fact arrive just in time.

With an inventory in excess of $100 billion, DoD should see significant inventory savings from implementing EDI if private-sector experience is a guide. Nevertheless, differences between DoD and private-sector inventory practices need to be recognized. For one, DoD traditionally maintains higher safety stock levels than private industry because stock shortages are unacceptable for certain inventory items. Further, to reduce purchasing costs, DoD tends to order larger quantities of items, making just-in-time practices more difficult. As a result of these and other differences, we cannot directly apply the optimistic private-sector experiences to DoD in estimating inventory savings. We need to be more conservative.

Consequently, we estimate that DoD could save between $67 million and $134 million in inventory costs (1 to 2 days of inventory) if it used EDI throughout the procurement and transportation areas to reduce the leadtimes associated with

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[3]Ned C. Hill and James V. Hansen, "The Impact of Electronic Data Interchange on Inventory Levels," *EDI Forum: The Journal of Electronic Data Interchange*, p. 55.

[4]Russell Mitchell and Peter Heywood, "Detroit Tries to Level a Mountain of Paperwork," *Business Week*, 25 August 1985, p. 96.

placing, receiving, requisitioning, processing, and transporting orders. Our estimate is based upon an annual inventory purchase of $20.7 billion per year and does not assume any reduction in DoD's current $100 billion inventory level. Most of the savings (between $56.7 million and $113.4 million) represent a one-time benefit (realized over a several-year period as DoD implements EDI) from shortening DoD's pipeline and adjusting safety stock levels. The remainder ($10.3 million to $20.6 million) arises from lower inventory holding costs, assumed to be approximately 18 percent per year.

Streamlined and Enhanced Business Operations

The ADL study of the grocery industry noted the potential for significant cost savings (between 23 and 50 percent of the total indirect cost savings) from improvements to internal systems and from enhanced business operations. Many of those improvements were attributed to the implementation of automated credit checks; reconciliation of invoices, purchase orders, and payment advices; and more efficient routing of orders.

Many of those same internal improvements (particularly the matching of invoices and purchase orders, and more efficient routing of orders) also have application within DoD and could lead to very large savings. One example of an enhanced business operation made possible through EDI occurs in the transportation area. Carriers who desire to move DoD freight must submit a tender for services that specifies the type and cost of service they would provide. In today's paper environment, DoD takes approximately 30 days to process those tenders and to accept a carrier's bid for service. In an EDI environment now being tested by the Military Traffic Management Command (MTMC), those same tenders can be processed and accepted within 24 hours. Consequently, a carrier that has excess equipment on the West Coast and wants to move it to the East Coast can submit a competitive rate electronically knowing that it will be accepted or rejected quickly. In essence, using EDI for tender processing results in a more efficient marketplace for the exchange of services, which in turn has the potential to significantly reduce DoD's transportation costs.

Another example of EDI cost savings through enhanced operations occurs in the contract administration area. Under the existing paper-based system, activities requesting supplies from a contractor (most often using DD Form 1155, *Order for*

Supplies and Services) have little or no visibility over when the supplies will arrive. EDI has the potential to significantly speed up the flow of information to the requesting unit, procurement office, and base finance office, resulting in greater visibility over contractor shipments and actual contractor performance.

We conservatively estimate that DoD could garner between $50 million and $100 million in annual savings through streamlined and enhanced business operations if it implemented EDI.

Prepayment Auditing

EDI would contribute to improved prepayment auditing of vendor invoices by positioning, in a more timely manner and with greater accuracy, the information necessary to conduct the audit. At the U.S. Army Finance and Accounting Center, for example, EDI is being combined with other management initiatives to significantly reduce overpayments to service providers. Those overpayments currently cost DoD $40 million a year – money that is returned to the General Services Administration (and its contract auditors) when uncovered by postpayment audits. We project, again being conservative, that electronic transmission of key DoD documents will generate annual savings between $15 million and $30 million through enhanced prepayment auditing.

Interest Costs

The DoD currently incurs in excess of $15 million annually in interest costs from late payments to its suppliers and carriers. Under the Prompt Payment Act, the Federal Government has 30 days to make a payment following receipt of an invoice. If payment is not made within this time period, then it incurs interest costs. By speeding up the flow of billing information, EDI should enable DoD to reduce its interest payments substantially, probably by as much as $10 million to $12 million annually.

Negotiated Price Reductions and Discounts

EDI, particularly in the procurement area, facilitates the streamlining of DoD operations and those of vendors, suppliers, and transporters. Some of the cost savings associated with streamlined operations can reasonably be expected to pass to DoD in the form of lower prices. As an example, implementing EDI at DoD's finance and accounting centers would allow carrier freight bills to be paid faster, permitting DoD

to take advantage of carrier discounts (carriers typically offer a 1 percent discount for payment in 15 days rather than the normal 30 days). Assuming a widespread EDI program, we estimate that DoD could save between $5 million and $10 million annually through negotiated price reductions and discounts.

Shipment Tracing

DLA recently estimated that using EDI to support its Enhanced DLA Distribution System (EDDS) would save approximately $330,000 a year by eliminating six GS-12 positions. The individuals currently in those positions trace cargo movements either at the request of the receiving unit or in response to a carrier's claim for payment. In an electronic environment, tracing information would be forwarded daily from the transporter to the shipper, thus reducing the requirements to trace individual shipments or invoices.

When fully implemented, EDDS will process approximately 145,000 GBL shipments per year, slightly more than 6 percent of the DoD total of 2.3 million. We project that DoD would save about $5.2 million annually in tracing costs if EDI was applied to all 2.3 million shipments. If we include all DoD shipments moving under commercial bills of lading, the cost savings would be much higher. Therefore, we estimate that DoD would save between $5 million and $15 million in tracing costs through implementation of EDI.

Summary

In the six categories of indirect benefits examined above, we estimate that EDI would save DoD between $152 million and $301 million annually in indirect costs (see Table 2-5), or between $1.55 and $3.07 for every dollar of direct savings. Since some of the savings are nonrecurring, we obviously should not select the higher ratio, even though it is consistent with private-sector experience. The lower ratio, 1.55 to 1, approximates the ratio used in DoD's EDI program in transportation (1.8 to 1). That closeness suggests that an indirect-to-direct cost savings ratio of 1.8 to 1 is reasonable for calculating the indirect savings associated with the 16 documents targeted in this study. Using that ratio, we obtain an indirect cost savings total of $176 million, which when added to the $98 million in direct savings, totals $274 million in annual savings for DoD (Table 2-6).

TABLE 2-5

INDIRECT COST SAVINGS

Category	Estimated annual savings ($ millions)
Inventory	67 - 134
Streamlined and enhanced operations	50 - 100
Prepayment auditing	15 - 30
Interest costs	10 - 12
Negotiated price reductions and discounts	5 - 10
Shipment tracing	5 - 15
Total	152 - 301

TABLE 2-6

DIRECT AND INDIRECT COST SAVINGS

Category	Annual savings ($ millions)
Direct	98
Indirect	176
Total	274

LIFE-CYCLE-COST SAVINGS

The $274 million in annual savings from electronically exchanging the 16 documents presumes that 100 percent of those documents would be transmitted electronically. However, DoD will almost certainly not achieve that rate in the early years of its Electronic Commerce program. We believe that a more meaningful measure of the cost effectiveness of Electronic Commerce is the life-cycle-cost savings generated by the program.

To calculate those savings, we assumed a 10-year life cycle and a rate of implementation for Electronic Commerce over that period. We established the implementation rate by asking several DoD functional experts, all with EDI experience, to estimate the percentage of transactions that would move electronically each year over the 10-year period. (Table 2-7 shows their estimates.) All of the experts assumed that implementation would start slowly, build to a peak in the middle years, and level off in later years. They also assumed that a 100 percent implementation rate would not be realized since every vendor doing business with DoD would probably not be capable of exchanging business information electronically. The most optimistic expert projected that, at the end of 10 years, 85 percent of all documents would move electronically, while the most pessimistic estimated only 65 percent.

TABLE 2-7

EDI IMPLEMENTATION RATE

(Percent)

Functional expert	Year									
	1	2	3	4	5	6	7	8	9	10
1	2	6	10	20	30	45	50	55	60	65
2	2	8	15	25	37	50	60	65	70	75
3	1	5	30	40	50	60	65	70	75	80
4	1	1	3	10	30	60	70	75	80	85
5	5	10	23	33	50	65	73	75	78	80
Average	2	6	15	25	40	56	65	69	74	78

Using the average implementation rate of the experts as a guide, we estimate that DoD's 10-year life-cycle savings from Electronic Commerce would total $1.17 billion. As shown in Table 2-8, the savings would be modest in the early years of the program but become significant in later years as Electronic Commerce becomes DoD's standard for conducting business.

TABLE 2-8

LIFE-CYCLE-COST SAVINGS

	Year									
	1	2	3	4	5	6	7	8	9	10
Rate of implementation (%)	2	6	15	25	40	56	65	69	74	78
Savings ($ millions)	5	16	42	68	108	153	177	189	202	213

Note: Total life-cycle-cost savings = $1.17 billion

OTHER AREAS OF OPPORTUNITY

The previous section was based on savings that could be realized by converting paper-based documents to EDI. We selected that approach for our business case because easily quantifiable savings are readily apparent. However, other important EDI opportunity areas should also be considered. The best example of such an area is MODELS. Although most Defense Logistics Standard Systems transactions have been electronically transmitted for years, technology advances have made current procedures obsolete. Those transactions are now being converted to EDI so that DoD can incorporate additional requirements, increase flexibility, and increase communications capability. Although those benefits are not quantified here, they are clearly substantial.

INVESTMENT COSTS

The DoD obviously will need to invest substantially in computer hardware, software, telecommunications, and program support to realize the cost savings we present above. Although both the private and public sectors have only limited experience in estimating the level of EDI investment necessary to achieve a given level of cost savings, DoD's EDI program for transportation provides some insight. That program estimates a cost savings-to-investment ratio of 14 to 1 ($140 million in life-cycle savings for $10 million in investment costs).

Using that ratio as a guide, we can develop savings and investment curves for converting our 16 documents to EDI (see Figure 2-1 and Table 2-9). We estimate that

investment costs will total approximately $79 million over the next 10 years. Table 2-9 shows that approximately $6 million has already been invested in DoD's EDI program with no appreciable savings. We estimate that savings will begin to accrue in 1991 and grow rapidly after the cost/savings break-even point in 1992. The level of investment, estimated to peak at $16 million in FY91, is then expected to decline steadily over the remaining 9 years of the program as DoD replaces the 16 documents with their electronic equivalents.

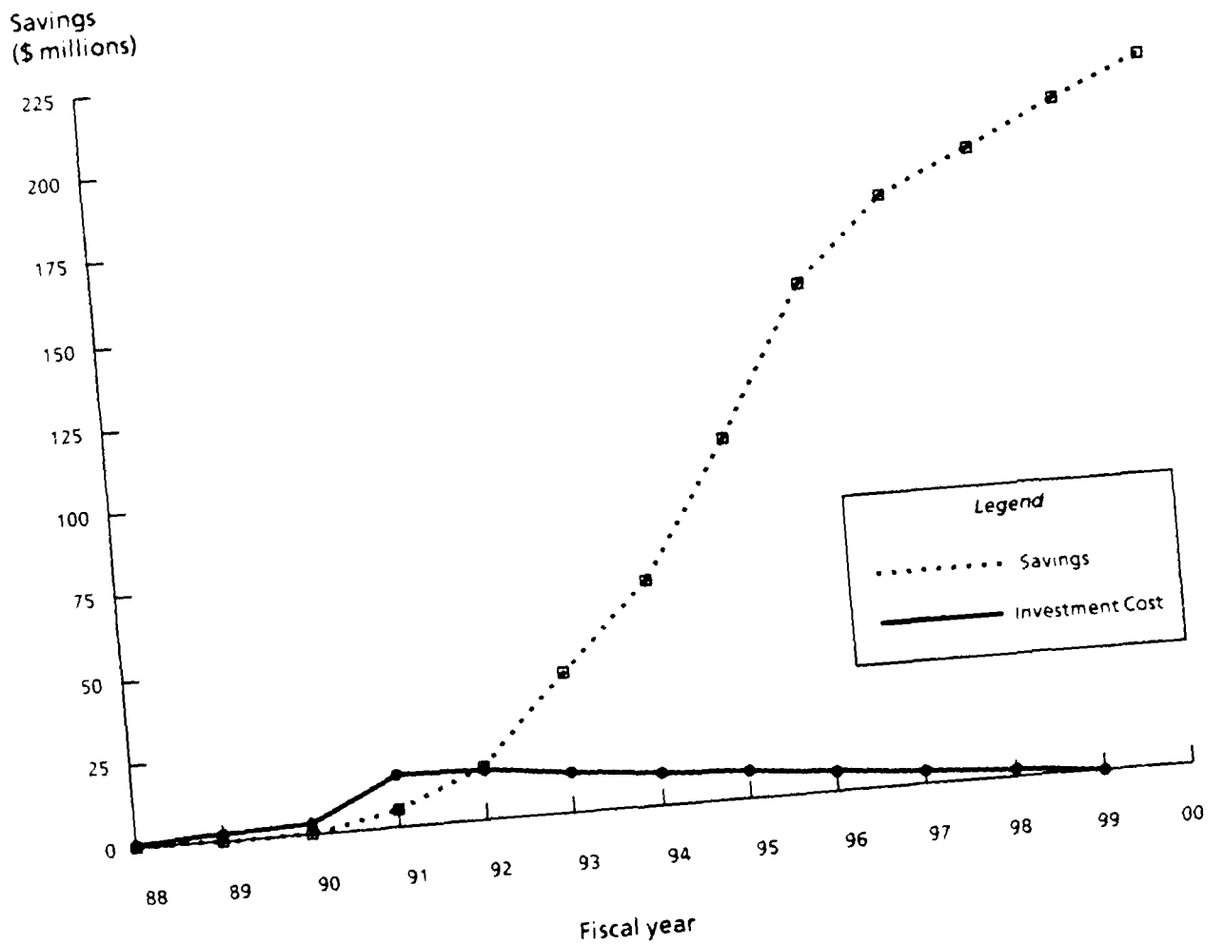

FIG. 2-1. SAVINGS AND INVESTMENT COST CURVES

Both Figure 2-1 and Table 2-9 show a lag between the time the EDI investment is made and the time appreciable savings accrue. Although substantial, that lag is consistent with private-sector experience as well as DoD's EDI efforts to date.

TABLE 2-9

SUMMARY OF SAVINGS AND INVESTMENT COSTS

($ millions)

	Fiscal year													Total
	88	89	90	91	92	93	94	95	96	97	98	99	00	
Investment	1	2	3	16	15	12	10	8	6	4	2	0	0	79
Savings	0	0	0	5	16	42	68	108	153	177	189	202	213	1,173

When a project shows a substantial lag between the time of investment and the accrual of benefits, many businesses use either the net present value (NPV) or the internal rate of return (IRR) to evaluate its potential. The NPV is the current value of future returns discounted by the cost of capital, less the investment cost. Typically, projects with a NPV greater than zero are undertaken. Equation 1 gives the formula for calculating NPV.

$$NPV = \sum_{t=1}^{N} \frac{R_t}{(1+k)^t} - C, \qquad \text{[Eq. 1]}$$

where N is the number of years, R_t is the net cash flow in year t, k is the discount rate, and C is the total investment required. Using the 13-year stream of savings (net cash flow) shown in Table 2-9, an investment of $79 million, and a discount rate of 10 percent for DoD, we obtain an NPV of approximately $369 million.

The IRR is the interest rate that equates the present value of future returns to the investment. The formula for calculating the IRR, which is very similar to that used to calculate NPV, is given by Equation 2.

$$C = \sum_{t=1}^{N} \frac{R_t}{(1+r)^t}, \qquad \text{[Eq. 2]}$$

where C, N, R_t, and t are as defined previously, and r is the IRR. Solving Equation 2 for r yields an IRR of just over 30 percent, which suggests a very favorable investment opportunity.

Both measures indicate a strong business case for DoD – the NPV is substantial and the IRR is in excess of 30 percent. In addition, DoD will recover the full amount of its investment before the end of FY94.

SUMMARY

Electronic Commerce offers DoD a tremendous opportunity to reduce its cost of conducting business. For the 16 documents examined in this study, we estimate a 10-year cost savings of almost $1.2 billion. To obtain those savings, DoD will need to invest approximately $79 million.

Several factors influence the magnitude of the cost savings and the investment identified in this analysis. They include the indirect-to-direct-cost savings ratio, the implementation rate, and the investment-to-cost ratio. Throughout the analysis, whenever we were forced to make an assumption, we tended to be conservative. Additionally, our savings and investment figures apply only to the 16 documents examined. We therefore believe that the savings presented meet the test of reasonableness and represent the minimum that DoD should expect from an Electronic Commerce program.

Finally, a review of the potential cost savings for each document clearly shows that the procurement and contract administration area offers DoD the greatest opportunity. Consequently, we believe that DoD needs to target that area for immediate and priority attention.

The next chapter discusses the role, requirements, and initiatives of the Executive Agent in capturing the savings identified above.

CHAPTER 3

EXECUTIVE AGENT – TASKINGS, INITIATIVES, AND REQUIREMENTS

PRIMARY TASKINGS

In designating DLA to act as DoD's Executive Agent for EDI and Data Protection, the Principal Deputy Assistant Secretary of Defense (Production and Logistics), assigned, among other things, the following taskings to the Executive Agent:

- Maintaining and promulgating implementation guidelines for EDI and Protection of Logistics Unclassified/Sensitive (PLUS) data
- Providing common-user support standards and services
- Promoting EDI implementation by focusing on broad DoD and industry implementation opportunities
- Establishing and maintaining a standard mechanism for data protection and user authentication
- Budgeting and supporting all Executive Agent functions, including common support services.

MAJOR INITIATIVES

To accomplish these and other taskings, the Executive Agent created a plan of action that addresses the administrative, technical, functional, and security requirements of the program. The key activities in that plan are presented below.

Administrative

The Executive Agent has established an Executive Administrator's office to encourage the use of EDI/PLUS throughout DoD. That office will focus on such areas as the use of readily accessible technology and industry-accepted standards to develop, test, and provide common capabilities for EDI implementation. It will work closely with the Military Services and Defense agencies to develop, detail, monitor, and provide support in the execution of EDI/PLUS implementation plans. Finally, it

will determine and submit EDI/PLUS funding requirements to the Assistant Secretary of Defense (Production and Logistics). These funding requirements are discussed later in this chapter.

Technical

The Executive Agent has designated the Lawrence Livermore National Laboratory (LLNL) as its lead engineering research and advanced development support team to implement EDI/PLUS. LLNL is to design the technical configuration of an EDI/PLUS research and development network, design a test bed to investigate promising EDI/PLUS products, develop a pilot system that can be used throughout DoD for implementing EDI, and contribute to the formulation and acceptance of EDI/PLUS standards.

Functional

The Executive Agent has designated the Logistics Management Institute (LMI) as a Center for Excellence for EDI/PLUS. LMI is to advise on the organization and structure of EDI/PLUS programs; formulate operational concepts and assist in selecting EDI/PLUS applications for demonstration in the areas of procurement, contract administration, payment, supply, maintenance, and transportation; assist the Military Services and Defense agencies in modernizing existing logistics systems to incorporate EDI techniques; and identify the requirements for a comprehensive PLUS program.

Security

The Executive Agent plans to address all EDI security issues through the PLUS initiative. Its objective is to identify an automated security system design that will protect and safeguard all forms of unclassified or sensitive data. Both "outside" and "inside" layers of security will be required. Examples of outside layers of security include electronic signatures, data encryption, digital data conversion, standards, and regulations. Inside layers may include access security, data security, systems security, and applications security. PLUS will also include development of a variety of plans including training, deployment, continuity of operations, configuration management, maintenance, and logistics support.

RESOURCE REQUIREMENTS

As noted in Chapter 2, DoD cannot reap the benefits of Electronic Commerce without making a sizable investment in systems and procedures. Table 3-1 shows, for the 16 documents that we used to develop a business case for Electronic Commerce, the annual funding requirement for FY91 through FY95. It also shows the funding already requested by the Executive Agent for those same years. Clearly, the requested funding is consistent, in general terms, with that used in developing the business case, although it does decline somewhat more rapidly in the outyears.

TABLE 3-1

ELECTRONIC COMMERCE FUNDING REQUIREMENTS

Fiscal year	Funding requirement ($ millions)	
	Business case	Requested by Executive Agent
91	16.0	11.0
92	15.0	10.5
93	12.0	8.5
94	10.0	7.5
95	8.0	1.6

SUMMARY

Electronic Commerce promises to cut DoD's costs dramatically – over $1 billion in 10 years for the 16 documents examined in this report. But to capture these savings, DoD will need to invest approximately $79 million. This investment will put in place the necessary systems and procedures that will move DoD toward a paperless operating environment.

The Executive Agent is key to the success of DoD's Electronic Commerce program. In the short term, it will provide the incentive and focus for obtaining early and significant savings. In the long term, it will provide for a coordinated and efficient approach to changing DoD's business practices.

APPENDIX

DIRECT COST WORKSHEETS

This appendix presents the worksheets used to calculate the direct cost savings for each of the 16 documents (and variations) listed in Table 2-4 of the main text. We present the worksheets by opportunity area: procurement and contract administration, transportation, supply and maintenance, and fuels. Each worksheet shows the direct cost activity in the left column and the processing unit (contract administration, purchasing office, payment office, etc.) along the top. We estimated each entry, which is either a low, medium, or high score, using the criteria listed in the Comments column in Table 2-2. [On one form – Department Defense (DD) Form 250 – we multiplied the scores by two since the typical document is processed through two additional, but identical, units.] We assigned medium scores to most activities, unless a functional expert offered a strong argument for an alternative. When a particular activity was not performed by a processing unit, we assigned a zero score, which is indicated with a blank.

The total savings per document figure is the net savings for every copy of the document when transmitted electronically. As described in Chapter 2, we assumed that operating costs under manual and electronic data interchange (EDI) processing would remain the same except for telecommunications costs, which would increase under EDI. We calculated the telecommunications costs based upon the number of characters in each document, assuming that the information contained in the document would remain unchanged after conversion to EDI. We calculated those costs from information supplied from an ongoing EDI test at the Marine Corps Payment Center in Albany, Georgia.

We then multiplied the savings per copy by the annual number of copies generated (volume) to get a total savings for each document – as shown at the bottom of each worksheet. We derived the volumes from a number of sources within the Department of Defense (DoD) and from information on file at the Office of Management and Budget. For some documents, the volumes were not readily available and had to be calculated by functional experts and DoD personnel. In other

cases, we were provided different volumes for the same document. Whenever volume numbers were in conflict, we used the smallest number for calculating cost savings.

A brief description of each document appears below. Existing American National Standards Institute (ANSI) EDI transaction sets can accommodate many of these documents. In other cases (especially in the supply/maintenance area) new transaction sets may be required.

PROCUREMENT/CONTRACT ADMINISTRATION (See Tables A-1 through A-8)

DD Form 250 – Material Inspection and Receiving Report. The DD Form 250 is a multiple purpose document. It is primarily used for inspection, acceptance, and receiving of materials from a contractor, but it also is used as an invoice if a contractor chooses. It has a standard distribution: to the consignee, the contract administration office, the purchasing office, and the payment office. It also may be sent to as many as 18 additional organizations under certain conditions. ANSI transaction sets 810, 856, 861, and 863 could be substituted for the DD Form 250.

SF 1443 – Contractor's Request for Progress Payments. The General Services Administration Standard Form (SF) 1443 is used by contractors to request progress payments from DoD. Progress payments are usually made on a regular and continuous basis. The request for payment and the actual payment process itself could be accomplished by electronic funds transfer. ANSI transaction sets 810 and 820 are ideal for this application.

SF 30 – Amendment of Solicitation/Contract Modification. The SF 30 is used to modify contracts, orders, or solicitations. Contractors receive the form and use it to adjust their internal proposal preparation and contract/order management systems. EDI transmission of this document will permit better visibility over contract details and improve the ability to track contract line items, unit prices, delivery schedules, engineering changes, and amended shipping instructions. ANSI transaction sets 850 and 860 may apply to portions of the SF 30.

SF 18 – Request for Quotations. Although the SF 18 is principally a paper document, DoD executes as much as 50 percent of its requests for quotations by telephone. The SF 18 is used by prospective DoD suppliers, who complete the unit price and certification sections and then return the form to DoD. ANSI transaction sets 840 and 843 are designed for requesting and sending quotations electronically.

SF 129 – Solicitation Mailing List Application. The SF 129 allows prospective vendors to enroll in the buying agency's automated bidders' mailing list system. It is completed by the vendor and mailed to the buying office where it is reviewed and entered into an automated mailing list. The SF 129 is an

excellent candidate for EDI, in part because the Office of Federal Procurement Policy wants to develop a national bidders list.

DD Form 1155 – Order for Supplies and Services. Functioning as either a purchase order for small purchases (less than $25,000) or delivery orders for indefinite delivery type contracts, DD Form 1155 is one of the most pervasive forms in DoD. Some procurement activities have developed local forms that mimic the purchase order function of the DD Form 1155 to handle their own special needs. The ANSI transaction set 850 is well suited for transmitting DD Form 1155 information.

TRANSPORTATION (See Tables A-9 through A-13)

SF 1103 – Freight GBL; CBL; SF 1113 – Public Voucher. These documents are used by DoD to procure freight transportation and related services from commercial carriers. The SF 1103 (freight Government bill of lading), used to procure nonlocal service, is a seven-part document distributed to the carrier, shipper, consignee, Military Traffic Management Command (MTMC), and finance center. The CBL (commercial bill of lading) is used to procure local small package services. Carriers submit the SF 1113 to the finance center as an invoice. The ANSI transaction sets 820 and 858 could accommodate these documents.

SF 1203 – Personal Property GBL; 619/619-1 Statement of Accessorial Services Performed; and SF 1113 – Public Voucher. These documents are used by DoD to procure personal property transportation and related services from commercial carriers. The SF 1203 is a seven-part document distributed to the carrier, shipping office, receiving office, MTMC, and finance center. The 619 and 619-1, which are used to confirm the performance of additional personal property services, must be submitted along with the SF 1113 for payment to the finance center. The ANSI transaction sets 820 and 858 are suitable for these documents.

SF 1169 – Government Travel Request; SF 1113 – Public Voucher. These documents are used by DoD to procure travel services. The SF 1169 is distributed to the finance center by the passenger carrier along with an SF 1113 for payment. The ANSI transaction sets 820 and 858 could be applied to these documents.

Voucher Stub and Check. These documents are used to pay carriers for transportation-related services. The check is produced by the finance center, combined with the stub from the public voucher (SF 1113), and then mailed to the carrier. The voucher stub serves as the carrier's remittance advice. The ANSI transaction set 820 is suitable for these documents.

MT 364R – Standard Tender. The tender specifies the freight rates under which carriers propose to move DoD cargo. It provides information for transportation pricing, carrier selection, auditing, and payment. Carriers must

submit nine copies to MTMC for processing. MTMC distributes copies of the tender to its Eastern and Western Area Commands, the General Services Administration, Navy Material Transportation Office, and to the carrier. The ANSI transaction set 602 has been created to replace this document.

SUPPLY AND MAINTENANCE (See Tables A-14 through A-17)

SF 364 – Report of Discrepancy (Supply). The SF 364, administered by the Defense Logistics Standard Systems Division, reports shipment conditions such as incorrect quantity, improper labeling, or poor conditions. It is sent to the DoD item manager or an item manager from an affiliated civil agency, such as the General Services Administration.

SAV 926 – Monthly Report, Receipt of Repairables. The SAV (Standard Aviation Systems Command) 926, an Army document, is generated monthly by commercial maintenance activities to notify inventory control points of the quantity and status of unserviceable assets sent to them for repair. The other Military Services use forms comparable to the SAV 926.

SF 368 – Product Quality Deficiency Report. The SF 368 is administered by the Defense Logistics Agency and reports material defects stemming from the original manufacturer. The SF 368 may require product analysis or testing by laboratories and contact with the vendor. Like the SF 364, it is sent to the DoD item manager or an item manager from an affiliated civil agency.

SF 361 – Transportation Discrepancy Report. The SF 361, administered by MTMC, is used to report conditions such as damage to the material while intransit or delivery to the wrong recipient. It is generally sent to the appropriate MTMC area command, and to the ultimate consignee if it is issued by an intermediate receiver. A copy is also sent to the commercial carrier if one is involved.

FUELS (See Table A-18)

DD Form 1898 – Aviation Fuels Sales Slip. The DD Form 1898, an aviation fuel sales slip or "delivery ticket," is used to document that the aviation fuel invoiced for payment on an into-plane invoice was actually delivered to a Government activity. DD Form 1898 into-plane receipts are signed by the pilot, who retains a copy. The fuel company sends another copy of the delivery ticket with its into-plane invoice to the Defense Fuels Supply Center for payment. If the hardcopy DD Form 1898 has valid nameplate information and is signed by a Government representative, then the Defense Fuels Supply Center certifies the invoice for payment. ANSI transaction sets 810 and 856 can be used to replace the DD Form 1898 and commercial invoice.

TABLE A-1

DIRECT COST SAVINGS WORKSHEET

DD FORM 250 – *MATERIAL INSPECTION AND RECEIVING REPORT*

Cost activity	Savings per processing unit ($)							Comments
	Contract admin. office	Procure-ment office	Consignee	Payment office	Payment office[a]	Nonstandard distribution[b]	Subtotal	
Document distribution							0 00	
Mailing							0 00	
Document receipt	0 02	0 02	0 02	0 03	0 03	0 04	0 16	Multiple copies to payment office
Document processing	0 26	0 26	0 26	0 26	0 26	0 52	1 82	
Document preparation and control	0 21	0 21	0 47	0 47	0 47	0 42	2 25	Multiple copies and purposes
Data entry	0 17	0 17	0 17	0 17	0 17	0 34	1 19	
Error resolution	0 07	0 07	0 07	0 07	0 07	0 14	0 49	
Document storage and retrieval	0 16						0 16	
Subtotal	0 89	0 73	0 99	1 00	1 00	1 46	6 07	
Telecommunications costs	-0 05	-0 05	-0 05	-0 05	-0 05	-0 10	-0 35	
Total	0 84	0 68	0 94	0 95	0 95	1 36	5 72	

Total savings = annual volume x savings per document

Total savings = 2,500,000 x $5 72 = $14,300,000

[a] When used as an invoice, the DD Form 250 passes through the payment center twice.

[b] Assumes the equivalent of two additional processing units.

TABLE A-2

DIRECT COST SAVINGS WORKSHEET

SF 1443 – *CONTRACTOR'S REQUEST FOR PROGRESS PAYMENTS*

Cost activity	Savings per processing unit ($)			Comments
	Contract admin. office	Payment office	Subtotal	
Document distribution	0 04		0 04	
Mailing	0 11		0 11	Assumes mail bundling
Document receipt		0 02	0 02	
Document processing	0 15	0 26	0 41	
Document preparation and control	0 13	0 21	0 34	
Data entry		0 17	0 17	
Error resolution	0 05	0 07	0 12	
Document storage and retrieval		0 16	0 16	
Subtotal	0 48	0 89	1 37	
Telecommunications costs	- 0 05	- 0 05	- 0 10	
Total	0 43	0 84	1 27	

Total savings = annual volume × savings per document

Total savings = 400,000 × $1 27 = $508,000

TABLE A-3

DIRECT COST SAVINGS WORKSHEET

SF 30 – *AMENDMENT OF SOLICITATION/CONTRACT MODIFICATIONS (LOCAL)*

Cost activity	Savings per processing unit ($)						Comments
	Procurement office	Receiving office	Base finance office	Base finance[a] office	Requesting unit	Subtotal	
Document distribution	0 04					0 04	
Mailing	0 26					0 26	
Document receipt		0 02	0 02	0 02	0 01	0 07	
Document processing		0 15	0 26	0 26	0 15	0 82	
Document preparation and control		0 21	0 21	0 21	0 13	0 76	
Data entry		0 17	0 17	0 17	0 06	0 57	
Error resolution		0 07	0 09	0 09	0 07	0 32	
Document storage and retrieval	0 16	0 10	0 16	0 16	0 10	0 68	
Subtotal	0 46	0 72	0 91	0 91	0 52	3 52	
Telecommunications costs	- 0 09	- 0 02	- 0 02	- 0 02	- 0 02	- 0 17	
Total	0 37	0 70	0 89	0 89	0 50	3 35	

Total savings = annual volume × savings per document

Total savings = 3,750,000 × $3 35 = $12,562,500

[a] Receives two copies at different times

TABLE A-4

DIRECT COST SAVINGS WORKSHEET

DD FORM 1155 – *ORDER FOR SUPPLIES AND SERVICES*

Cost activity	Savings per processing unit ($)						Comments
	Procurement office	Receiving office	Base finance office	Base finance[a] office	Requesting unit	Subtotal	
Document distribution	0.04					0.04	
Mailing	0.26					0.26	
Document receipt		0.02	0.02	0.02	0.01	0.07	
Document processing		0.15	0.26	0.26	0.15	0.82	
Document preparation and control		0.21	0.21	0.21	0.13	0.76	
Data entry		0.17	0.17	0.17	0.06	0.57	
Error resolution		0.07	0.09	0.09	0.07	0.32	
Document storage and retrieval	0.16	0.10	0.16	0.16	0.10	0.68	
Subtotal	0.46	0.72	0.91	0.91	0.52	3.52	
Telecommunications costs	-0.09	-0.02	-0.02	-0.02	-0.02	-0.17	
Total	0.37	0.70	0.89	0.89	0.50	3.35	

Total savings = annual volume × savings per document

Total savings = 11,000,000 × $3.35 = $36,850,000

[a] Base finance office receives two copies at different times.

TABLE A-5

DIRECT COST SAVINGS WORKSHEET

SF 30 – *AMENDMENT OF SOLICITATION/CONTRACT MODIFICATION (NON-LOCAL)*

Cost activity	Savings per processing unit ($)								Comments
	Procurement office	DCAA	Contract admin. office	Consignee	Payment office	Trans. office	MIPR initiating activity	Subtotal	
Document distribution	0.06							0.06	Complicated distribution
Mailing	0.26							0.26	Complicated distribution
Document receipt		0.02	0.03	0.02	0.02	0.02	0.03	0.14	Multiple copies/purposes
Document processing		0.41	0.41	0.15	0.26	0.15	0.15	1.53	
Document preparation and control	0.21	0.21	0.47	0.13	0.13	0.13	0.13	1.41	
Data entry		0.06	0.68	0.06	0.06		0.06	0.92	
Error resolution		0.05	0.09	0.05	0.05		0.05	0.29	
Document storage and retrieval		0.10	0.28					0.38	
Subtotal	0.53	0.85	1.96	0.41	0.52	0.30	0.42	4.99	
Telecommunications costs	-0.55	-0.09	-0.09	-0.07	-0.07	-0.07	-0.07	-1.01	
Total	(0.02)	0.76	1.87	0.34	0.45	0.23	0.35	3.98	

Total savings = annual volume x savings per document

Total savings = 250,000 x $3.98 = $995,000

Note: DCAA = Defense Contract Audit Agency, MIPR = Military Interdepartmental Purchase Request.

TABLE A-6

DIRECT COST SAVINGS WORKSHEET

SF 129 – *SOLICITATION MAILING LIST APPLICATION*

Cost activity	Savings per processing unit ($)	Comments
	Procurement office	
Document distribution		
Mailing		
Document receipt	0.02	
Document processing	0.26	
Document preparation and control	0.47	
Data entry	0.17	
Error resolution	0.07	
Document storage and retrieval		
Subtotal	0.99	
Telecommunications costs	-0.05	
Total	0.94	

Total savings = annual volume x savings per document

Total savings = 1,000,000 x $0.94 = $940,000

TABLE A-7

DIRECT COST SAVINGS WORKSHEET

SF 18 – *REQUEST FOR QUOTATIONS (TELEPHONE)*

Cost activity	Savings per processing unit ($)	Comments
	Procurement office	
Document distribution		
Mailing		
Document receipt		
Document processing		
Document preparation and control		
Data entry		
Error resolution		
Document storage and retrieval		
Telephone solicitation	3.50	
Subtotal	3.50	
Telecommunications costs	-0.05	
Total	3.45	

Total savings = annual volume x savings per document

Total savings = 4,000,000 x $3.45 = $13,800,000

TABLE A-8

DIRECT COST SAVINGS WORKSHEET

SF 18 – *REQUEST FOR QUOTATIONS (WRITTEN)*

Cost activity	Savings per processing unit ($)	Comments
	Procurement office	
Document distribution		
Mailing		
Document receipt	0.02	
Document processing	0.26	
Document preparation and control	0.21	
Data entry	0.17	
Error resolution	0.07	
Document storage and retrieval	0.16	
Subtotal	0.89	
Telecommunications costs	-0.05	
Total	0.84	
Total savings = annual volume x savings per document Total savings = 5,400,000 x $0.84 = $4,536,000		

TABLE A-9

DIRECT COST SAVINGS WORKSHEET

SF 1103 – *FREIGHT GBL; CBL*; SF 1113 – *PUBLIC VOUCHER*

Cost activity	Savings per processing unit ($)						Comments
	Trans. office	Payment office	Consignee	MTMC	Local finance and accounting office	Subtotal	
Document distribution	0.06					0.06	
Mailing	0.16					0.16	
Document receipt		0.02	0.02	0.02	0.02	0.08	
Document processing		0.26	0.26	0.26	0.26	1.04	
Document preparation and control	0.13	0.21	0.21	0.21	0.13	0.89	
Data entry		0.68	0.17	0.06	0.06	0.97	
Error resolution		0.09	0.07	0.05	0.05	0.26	
Document storage and retrieval		0.16				0.16	
Subtotal	0.35	1.42	0.73	0.60	0.52	3.62	
Telecommunications costs	-0.25	-0.05	-0.09	-0.09	-0.02	-0.50	
Total	0.10	1.37	0.64	0.51	0.50	3.12	

Total savings = annual volume × savings per document

Total savings = 2,300,000 × $3.12 = $7,176,000

TABLE A-10

DIRECT COST SAVINGS WORKSHEET

SF 1203 – *PERSONAL PROPERTY GBLs*; 619/619-1 – *STATEMENT OF ACCESSORIAL SERVICES PERFORMED*; SF 1113 – *PUBLIC VOUCHER*

Cost activity	Savings per processing unit ($)							Comments
	Trans. office	Payment office (GBLs)	Payment center (suppimt.)	Consignee	MTMC	Local finance and accounting office	Subtotal	
[illegible] distribution	0.06						0.06	
Mailing	0.16						0.16	
Document receipt		0.03	0.03	0.01	0.01	0.01	0.09	
Document processing		0.41	0.26	0.26	0.26	0.26	1.45	
Document preparation and control	0.13	0.47	0.21	0.21	0.21	0.13	1.36	
Data entry		0.68	0.17	0.17	0.06	0.26	1.14	
Error resolution		0.09	0.05	0.07	0.05	0.05	0.31	
Document storage and retrieval		0.16	0.16				0.32	
Subtotal	0.35	1.84	0.88	0.72	0.59	0.51	4.89	
Telecommunications costs	0.22	0.05	-0.05	-0.05	-0.05	-0.02	-0.44	
Total	0.13	1.79	0.83	0.67	0.54	0.49	4.45	

Total savings = annual volume x savings per document

Total savings = 800,000 x $4.45 = $3,560,000

TABLE A-11

DIRECT COST SAVINGS WORKSHEET

SF 1169 – *GOVERNMENT TRAVEL REQUEST*; SF 1113 – *PUBLIC VOUCHER*

Cost activity	Savings per processing unit ($)					Comments
	Trans. office	Payment office	MTMC	Local finance and accounting office	Subtotal	
Document distribution	0.06				0.06	
Mailing	0.11				0.11	
Document receipt		0.01	0.01	0.01	0.03	
Document processing		0.26	0.26	0.26	0.78	
Document preparation and control	0.13	0.13	0.13	0.13	0.52	
Data entry		0.06	0.06	0.06	0.18	
Error resolution		0.05	0.05	0.05	0.15	
Document storage and retrieval		0.16			0.16	
Subtotal	0.13	0.67	0.51	0.51	1.82	
Telecommunications costs	-0.06	-0.02	-0.02	-0.02	-0.12	
Total	0.24	0.65	0.49	0.49	1.87	

Total savings = annual volume × savings per document

Total savings = 390,000 × $1.87 = $729,300

TABLE A-12

DIRECT COST SAVINGS WORKSHEET

VOUCHER STUB AND CHECK

Cost activity	Savings per processing unit ($)	Comments
	Payment office	
Document distribution	0.02	
Mailing	0.26	
Document receipt		
Document processing	0.41	
Document preparation and control		
Data entry		
Error resolution		
Document storage and retrieval		
Subtotal	0.69	
Telecommunications costs	-0.02	
Total	0.67	

Total savings = annual volume × savings per document

Total savings = 270,000 × $0.67 = ≥ 80,900

TABLE A-13

DIRECT COST SAVINGS WORKSHEET

MT 364R – *STANDARD TENDER*

Cost activity	Savings per processing unit ($)					Comments
	Trans. office	MTMC	MTMC area commands	NAVMTO	Subtotal	
Document distribution		0.06			0.06	
Mailing		0.16			0.16	
Document receipt	0.02	0.03	0.02	0.02	0.09	
Document processing	0.26		0.26	0.26	0.78	
Document preparation and control	0.21	0.21	0.13	0.13	0.68	
Data entry	0.06	0.68	0.06	0.17	0.97	
Error resolution	0.05	0.09	0.05	0.07	0.26	
Document storage and retrieval						
Subtotal	0.60	1.23	0.52	0.65	3.00	
Telecommunications costs	-0.09	-0.45	-0.09	-0.09	-0.72	
Total	0.51	0.78	0.43	0.56	2.28	
Total savings = annual volume x savings per document Total savings = 30,000 x $2.28 = $68,400						

Note: NAVMTO = Navy Material Transportation Office

TABLE A-14

DIRECT COST SAVINGS WORKSHEET

SF 364 – *REPORT OF DISCREPANCY (SUPPLY)*

Cost activity	Savings per processing unit ($)					Comments
	Receiving activity	Shipper	Inventory control point (shipper)	Inventory control point (consignee)	Subtotal	
Document distribution	0 04		0 02		0 06	
Mailing	0 16		0 26		0 42	
Document receipt	0 01	0 01	0 03	0 03	0 08	
Document processing	0 15	0 15	0 26	0 26	0 82	
Document preparation and control	0 13	0 13	0 21	0 21	0 68	
Data entry			0 17	0 17	0 34	
Error resolution			0 07	0 07	0 14	
Document storage and retrieval			0 16		0 16	
Subtotal	0 29	0 29	0 90	0 74	2 22	
Telecommunications costs	- 0 32	- 0 09	- 0 14	- 0 09	- 0 64	
Total	0 17	0 20	1 04	0 65	2 06	

Total savings = annual volume × savings per document

Total savings = 300,000 × $2 06 = $618,000

TABLE A-15

DIRECT COST SAVINGS WORKSHEET

SAV 926 – *MONTHLY REPORT, RECEIPT OF REPAIRABLES*

Cost activity	Savings per processing unit ($)			Comments
	Receiving activity	Inventory control point	Subtotal	
Document distribution	0.04		0.04	
Mailing	0.16		0.16	
Document receipt		0.01	0.01	
Document processing		0.26	0.26	
Document preparation and control	0.13	0.47	0.60	
Data entry		0.68	0.68	
Error resolution		0.09	0.09	
Document storage and retrieval		0.16	0.16	
Subtotal	0.33	1.67	2.00	
Telecommunications costs	-0.10	-0.10	-0.20	
Total	0.23	1.57	1.80	

Total savings = annual volume × savings per document

Total savings = 280,000 × $1.80 = $504,000

TABLE A-16

DIRECT COST SAVINGS WORKSHEET

SF 368 – *PRODUCT QUALITY DEFICIENCY REPORT*

Cost activity	Savings per processing unit ($)			Comments
	Receiving activity	Inventory control point	Subtotal	
Document distribution	0.02	0.02	0.04	
Mailing	0.26	0.26	0.52	
Document receipt	0.01	0.03	0.04	
Document processing	0.15	0.26	0.41	
Document preparation and control	0.13	0.21	0.34	
Data entry		0.17	0.17	
Error resolution		0.07	0.07	
Document storage and retrieval		0.16	0.16	
Subtotal	0.57	1.18	1.75	
Telecommunications costs	-0.14	-0.14	-0.28	
Total	0.43	1.04	1.47	

Total savings = annual volume x savings per document

Total savings = 103,000 x $1.47 = $151,410

TABLE A-17

DIRECT COST SAVINGS WORKSHEET

SF 361 – *TRANSPORTATION DISCREPANCY REPORT*

Cost activity	Savings per processing unit ($)				Comments
	Reporting activity	MTMC area command	Consignee, shipper	Subtotal	
Document distribution	0.04		0.02	0.06	
Mailing	0.26		0.26	0.52	
Document receipt	0.01	0.01	0.01	0.03	
Document processing	0.26	0.15	0.26	0.67	
Document preparation and control	0.13	0.13	0.13	0.39	
Data entry		0.06		0.06	
Error resolution		0.05		0.05	
Document storage and retrieval		0.16		0.16	
Subtotal	0.40	0.56	0.40	1.36	
Telecommunications costs	0.32	-0.14	-0.19	-0.65	
Total	0.38	0.42	0.49	1.29	

Total savings = annual volume × savings per document

Total savings = 28,000 × $1.29 = $36,120

TABLE A-18

DIRECT COST SAVINGS WORKSHEET

DD FORM 1898 – *AVIATION FUELS SALES SLIP*

Cost activity	Savings per processing unit ($)	Comments
	Procurement office	
Document distribution	0 02	
Mailing	0 11	
Document receipt	0 02	
Document processing	0 41	
Document preparation and control	0 21	
Data entry	0 17	
Error resolution	0 09	
Document storage and retrieval	0 28	
Subtotal	1 31	
Telecommunications costs	- 0 05	
Total	1 26	
Total savings = annual volume x savings per document Total savings = 300,000 x $1 26 = $378,000		